

ABSTRACT OF DISCLOSURE

An optical switching apparatus includes an optical switch having a plurality of input ports and output ports, optical amplifiers, monitor circuits, optical amplifiers, monitor circuits, and a controller that controls the optical switch. The optical amplifiers are connected to the input ports of the optical switch. The monitor circuits are connected to the output ports of the optical switch. The controller selects one of the plurality of the monitor circuits based on predetermined rules to obtain the loss at the output ports and/or the differential loss between the channels of the optical switch. The controller further selects one of the optical amplifiers based on the configuration of the optical switch to compensate the loss and the differential loss among the different channels of the optical switch by pre-amplifying the optical signals before they reach the input ports of the optical switch.

$\frac{d}{dt} \left(\frac{\partial L}{\partial \dot{x}} \right) = \frac{\partial L}{\partial x}$